

**Wildlife Corridor Inventory by Scent Post Survey  
Hackett Hill, Manchester, NH – 2005**

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**Introduction**

In May 2005, work began on a wildlife corridor identification and monitoring project in the Hackett Hill area of Manchester. Located in the northwest corner of the City, this area includes the Manchester Cedar Swamp Preserve, a 600-plus acre preserve owned by The Nature Conservancy. This preserve was protected through an innovative settlement agreement in 1999 among the City of Manchester, U.S. Environmental Protection Agency and the NH Department of Environmental Services. Part of this settlement included \$2 million to permanently protect this ecosystem from development. It is the largest permanently protected block of conservation land in Manchester. Atlantic white cedar swamps are a globally rare natural community type. Of the 500,000 acres of wetlands in New Hampshire, only 550 acres are Atlantic white cedar swamps. The 42-acre swamp complex in the Manchester Cedar Swamp Preserve is among the state's biggest, and also among the best in quality.

Abutting the Preserve are large parcels of land that are currently being developed for residential use and still other parcels that are proposed for commercial development. The Hackett Hill Master Plan was recently developed by Vanasse Hangen Brustlin, Inc., outlining the development proposal.

**Purpose**

It is the intent of this project to document species occurrence, particularly those of mammals, in the Hackett Hill area. Past studies have been conducted under the auspices of the University of New Hampshire in 1995. Though dated, that study provides a background of the area a decade ago.

With development blossoming in the area, it is important to identify and document natural features that may be at risk. Open space is important not only for human quality of life, but for wildlife habitat as well. To identify and maintain wildlife corridors in the city means maintaining a link with the natural world that city life typically lacks. The rural towns surrounding Manchester share common areas with the City such as the Massabessic watershed, the Merrimack River and the Northwest/Black Brook Corridor. Political boundaries have no meaning to wildlife populations. Conservation linkages are crucial for maintaining the genetic viability of populations as young adults disperse from natal ranges. Other activities within a conservation corridor include foraging movements and seasonal migrations.

## **Methodology**

To date, this study has included only a scent post survey. A scent post survey provides information on the presence or absence of predators on the property. This animal group may include predators and furbearers attracted by scent, such as, raccoon, striped skunk, coyote, bobcat, fisher, pine marten, mink, red fox, gray fox, and black bear. Because these animals have large home ranges, and move around a lot, it is difficult to track the number of predators. However, by doing a scent post survey periodically, one can observe changes in the presence or absence of these mammals on the property. Snow tracking is also planned for the area, during the upcoming winter. For this survey, two transects were established consisting of three scent post stations on each transect. One transect was completely inside the Preserve and one was outside the Preserve boundaries. These are shown in the Appendix.

A scent post survey consists of a series of scent post stations established along a game trail or recreational trail. The stations are set up on one day, and checked the next day. Predators attracted to the scented disc in the center of the station leave behind tracks that can be identified using a key. Scent post surveys are ineffective during rainy or snowy evenings since tracks are likely to be eliminated.

Scent post stations are established at least 300 meters apart along a trail. It is best to alternate the sides of the trail where stations are placed to account for different wind directions. The locations are recorded on a map or by GPS, so that the same sites may be used in future years for comparison. Each station consists of a circle one meter in diameter. All rocks and vegetation are removed from the circle. Soil is then sifted evenly over the area using a screen with ¼ to ½ inch mesh. A scented disc (available from USDA) is placed in the center of each station. Instead of a disc, other forms of bait can be used, such as a cotton ball or swab dipped in a mixture of rotten eggs or meat. The following day, each scent post station is checked for tracks. This technique does not attempt to derive an estimate of abundance, since individuals cannot be counted. Regardless of the amount of tracks of any species at a site, it can only be confirmed that one individual of any particular species visited the site. In the northeast, the best time for scent post surveys is September, as the young-of-the-year are dispersing from their natal ranges.

A collaborative effort between the Planning Department and the Amoskeag Fishways Learning and Visitors Center was used to conduct this survey. Special thanks go to Wendy Schorr and Kathleen Neville of the Amoskeag Fishways. The Amoskeag Fishways was awarded a grant from The New Hampshire Fish & Game Department to provide urban wildlife education activities to adults and youth within Manchester. A goal for the current grant cycle is to plan 26 sessions between August 2005 and spring 2007 for adults to participate in training and a citizen science program to survey and monitor wildlife in Manchester. An additional goal is to have 100 adults participate. Two volunteers participated in this project.

## **Results**

The objective of the project was to document species occurrence, particularly those of mammals, in the Hackett Hill area. Monitoring consisted of six sessions in August and September. During each session, the sites were checked for activity in the morning and resifted if necessary. Any

tracks observed were identified, recorded and in some cases photographed. Photographic examples are included in the Appendix. One visit to one monitoring station was designated as one unit. This project collected data on 36 units (6 scent post stations x 6 monitoring sessions). Field data sheets are provided in the Appendix. Half of the monitoring sessions were conducted using sites that were resifted the previous day, and half were conducted using sites that were not resifted the previous day. During Session 3 (Sept. 7), tracks were recorded on sites that had not been altered by project staff for 19 days. The following list shows the time span between resifting of the sites:

8/16 - sites first established and baited;

8/17: 1 day; 8/18: 1 day; 9/7: 19 days; 9/8: 1 day; 9/10: 2 days; 9/13: 3 days.

Overall, five species of mammal were documented to have visited the scent post stations. These included *Odocoileus virginianus* (white-tailed deer), *Tamias striatus* (eastern chipmunk), *Tamiasciurus hudsonicus* (red squirrel), *Vulpes vulpes* (red fox), and *Urocyon cinereoargenteus* (gray fox). Also observed, either by sight or sign, outside of the scent post stations were *Procyon lotor* (raccoon), *Chrysemys picta* (eastern painted turtle), *Ardea herodias* (great blue heron), *Ceryle alcyon* (belted kingfisher), and *Thamnophis sirtalis* (common garter snake). Evidence of other animals, though not confirmed, included possible mink, skunk, dog or coyote, and bird species. Several monitoring sessions found tracks that were not clear enough to confirm a species. 17 of 36 total units recorded tracks of undetermined origin.

## **Discussion**

Differences among scent post station media made for differing results among stations. Due to the substrate, some stations were more suitable for producing tracks than others. Dry, sandy areas were not particularly conducive to the creation of identifiable tracks. Sites with soft, moist soil proved to be better tracking sites. Sites 1A and 2A had the poorest substrates for tracking of the six sites. The remaining four sites were seemingly ideal, but unidentifiable tracks were observed there as well. More consistent results could have been achieved with more uniform sites.

17 of 36 units consisted of unidentifiable tracks. 12 units consisted of identifiable tracks. 8 units consisted of no tracks or disturbance of the site. Combined results within a unit were common, in that identifiable and unidentifiable tracks were frequently found in the same unit. Though it is clear that more than just the identified animals visited the stations, the unidentified tracks leave a gap in the data. There may have been more species visiting the stations than stated, but this fact could not be verified.

The scent post survey technique can only verify presence of a species. Absence of any species can be inferred, but not verified. The fact that no tracks of any particular species were recorded does not necessarily mean that the species is absent from the study area. Nor does this technique reveal any information relative to abundance. The main advantage to the scent post survey technique is its economy and low-tech procedure.

## **Conclusions**

The objective of the project was to document species occurrence, particularly those of mammals, in the Hackett Hill area. Presence of five species was confirmed through observation of evidence at the scent post stations. In addition, five other species were confirmed through observation of evidence outside the scent post stations. None of the species confirmed were of special concern or requiring special protections.

Species confirmed by evidence at scent post stations:

Eastern chipmunk (*Tamias striatus*)  
Gray fox (*Urocyon cinereoargenteus*)  
Red fox (*Vulpes vulpes*)  
Red squirrel (*Tamiasciurus hudsonicus*)  
White-tailed deer (*Odocoileus virginianus*)

Species confirmed by observation/evidence outside scent post stations:

Belted kingfisher (*Ceryle alcyon*)  
Common garter snake (*Thamnophis sirtalis*)  
Eastern painted turtle (*Chrysemys picta*)  
Great blue heron (*Ardea herodias*)  
Raccoon (*Procyon lotor*)

**Table 1**  
**Frequency of Species Observed**

<b>Species</b>	<b>Units Observed</b>
White-tailed deer	5
Eastern chipmunk	3
Red squirrel	2
Red fox	2
Gray fox	1

## **References**

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